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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,345	10/23/2003	Norio Chiba	S004-5141	8549
40627	7590	11/22/2006	EXAMINER	
ADAMS & WILKS 17 BATTERY PLACE SUITE 1231 NEW YORK, NY 10004			CULBERT, ROBERTS P	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 11/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/692,345

Applicant(s)

CHIBA ET AL.

Examiner

Roberts Culbert

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) 3 and 4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,16-19,22,24,27-30,32,34-40 and 44-47 is/are rejected.
- 7) ☐ Claim(s) 5-15,20,21,23,25,26,31,33 and 41-43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date. 0706.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Species I in the reply filed on 10/31/05 is acknowledged.

Claims 3 and 4 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 11/11/02. It is noted, however, that applicant has not filed a certified copy of the application as required by 35 U.S.C. 119(b).

Claim Objections

Claim 40 is objected to because of the following informalities: Claim 40 recites a range of "5 im to 200 im". It is suggested that the claim be amended to recite "5 μ m to 200 μ m", as recited in the specification (Page 37). Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 27, 28, 36, 41 and 47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 1763

Claims 27 and 28 recite the limitation "the wet chemical etching". There is insufficient antecedent basis for this limitation in the claim.

Claim 36 recites " the aluminum silicon alloy". There is insufficient antecedent basis for this limitation in the claim.

Regarding Claim 41, the term "trace amounts" is a relative term that renders the claim indefinite. The term is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention.

Claim 47 recites "the antistatic means". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 22, 24, 29, 30, 32, 34, 35, 37-40, 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-162332 in view of U.S. Patent 6,388,239 to Muramatsu.

Art Unit: 1763

Regarding Claim 1, JP '332 teaches the invention substantially as claimed including a step of sharpening the light propagating probe body (Fig. 2); a step of forming the body into a hook shape; a step of metal film coating for forming the transparent opening section (Fig 10); a step of protecting the transparent opening with a resist material (Fig 14); a step for metal film coating a spring operating part to the rear of the hook shaped part (Fig 15) and a step of removing the resist (Paragraph 44 of translation)

JP '332 does not expressly teach the step of forming the reflecting surface.

However, Muramatsu teaches a method of manufacturing a light-propagating probe comprising a step of sharpening the light propagating probe body (Fig. 5A); a step of forming the body into a hook shape (Fig. 5B); a step of metal film coating (60) for forming the transparent opening section (Fig. 5D); and steps of forming the reflecting surface (Fig. 5C and 5E)

It would have been obvious to one of ordinary skill in the art at the time of invention to form a reflecting surface on the probe of JP '332 as shown by Muramatsu in order to enable observation at wavelengths in the ultraviolet and infared regions as taught by Muramatsu. (Col. 1, Lines 8-31)

Regarding Claim 2, JP '332 teaches the invention substantially as claimed including performing the steps in the order of: a step of sharpening the light propagating probe body (Fig. 2); a step of forming the body into a hook shape, a metal film coating step for forming the transparent opening section (Fig 10); a step of protecting the transparent opening with a resist material (Fig 14); a step for metal film coating a spring operating part to the rear of the hook shaped part (Fig 15) and a step of removing the resist (Paragraph 44 of translation)

Muramatsu teaches a method of manufacturing a light-propagating probe comprising a step of sharpening the light propagating probe body (Fig. 5A); a step of forming the body into a hook shape (Fig. 5B); a step of metal film coating (60) for forming the transparent opening section (Fig. 5D); and steps of forming the reflecting surface (Fig. 5C and 5E-5F)

In view of Muramatsu and JP '332, it would have been obvious to one of ordinary skill in the art at the time of the4 claimed invention to perform a step of forming the reflecting surface before and after a metal film coating step for forming the transparent opening section as shown by Muramatsu since this

Art Unit: 1763

order of steps provides the reflective surface. Further it would have been obvious to one of ordinary skill in the art to perform the step of protecting the transparent opening section with resist material in between the steps of forming the transparent opening section and coating a spring operating part to the rear of the hook shaped part, as this order is shown in JP '332. Although, the steps of protecting the transparent opening with a resist material and the step of forming the reflecting surface clearly may be performed in any order since these steps are unrelated and are applied to opposite regions of the light propagating probe body, it further would have been obvious to one of ordinary skill in the art to perform the step of protecting the transparent opening section with resist material prior to the step of forming the reflecting surface in order to provide protection for the microscopic aperture from grinding particles.

Moreover, it has been held that selection of any order of process steps is *prima facie* obvious in the absence of new or unexpected results. *Ex parte Rubin*, 128 USPQ 440 (Bd. App. 1959) In this case, applicant has not demonstrated that the order of process steps is in any way critical to the invention.

Regarding Claim 22, JP '332 teaches the step of making the light propagating in a hook shape is a step of irradiating carbon dioxide gas laser light to a desired position close to a tip section.

Regarding Claim 24, Muramatsu teaches forming the reflecting surface on a light propagating body pressing against a rotating polishing plate utilizing the resilience of the light propagating body itself. (See Figures 5c and 5e)

Regarding Claim 29, JP '332 teaches (Paragraph 39 and Figure 10) the step of metal film coating step for forming the transparent opening is a vacuum deposition (evaporation) step using a rotating deposition jig to carry out deposition, while rotating the light propagating body, the rotating deposition jig having a structure where the light-propagating body (1001) is held so that the jig rotational axis (1003) becomes the same as or parallel to the center axis of the tip section (1004) of the light-propagating body that has been sharpened and formed into a hook shape.

Regarding Claim 30, JP '332 teaches the metal film coating step for forming the transparent opening is a step of depositing the metal film coating to a desired film thickness in at least two stages,

Art Unit: 1763

including a procedure of carrying out deposition a first time (Figure 10), opening a vacuum chamber to the atmosphere and carrying out deposition a second time (Figure 15).

Regarding Claim 32, JP '332 teaches (Figure 15 and Paragraph 44) the step for metal film coating (1505) spring operating part rearwards from the hook-shaped section is a vacuum deposition (evaporation) step using a rotating deposition jig to carry out deposition while rotating the light-propagating body, the rotating deposition jig having a structure where the light-propagating body is held so that the jig rotational axis (1506) becomes the same as or parallel to the center axis of the spring operating part (1503) rearward from the hook-shaped section.

Regarding Claim 34, JP '332 teaches the metal film coating is aluminum. JP '338 teaches that the coating metal may be a reflective metal such as aluminum, gold chromium etc. (Paragraph 5)

Regarding Claim 35, Muramatsu teaches that the metal film coating may be a two layer construction of titanium, chromium or the like and gold. (Col. 4, Lines 19-24)

Regarding Claim 37 JP '332 teaches the metal film coating is 150 nm (Paragraphs 17, 39 and 44). JP '338 teaches that the coating metal may be 20-1000nm. (Paragraph 11)

Regarding Claims 38-40, JP' 332 in view of Muramatsu does not expressly teach the deposition or rotation rate, however since these are well-known result effective variables in the art it would have been obvious to optimize them. Further, there is no indication that the broad ranges recited for these parameters are critical to the invention.

Regarding Claims 46 and 47, Official Notice is taken by the Examiner that the use of various antistatic means are well known in the manufacturing industry, especially micro-devices, for the purpose of reducing dust and debris contamination on processed materials. It would have been obvious to one of ordinary skill in the art to use such antistatic means in the method of JP '332 in view of Muramatsu in order to prevent such particle contamination in the well-known manner. Further, applicants' recitation of antistatic means reads on simply performing the manufacturing process in a conventional temperature/humidity-controlled environment such as any indoor manufacturing environment.

Art Unit: 1763

Claim 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-162332 in view of U.S. Patent 6,388,239 to Muramatsu, as applied above to Claims 1, 2, 22, 24, 29, 30, 32, 34, 35, 37-40, 46 and 47, and in further view of JP 11-271338.

Regarding Claim 16, JP '332 teaches a first solution layer (202) comprising an etching fluid comprising hydrofluoric acid, (Paragraph 14) but does not expressly teach a second solution layer having a lower specific gravity than the first solution layer and not reacting or mixing with the first solution layer. Muramatsu teaches sharpening by applying tension across the tube (Figure 5A).

JP '338 illustrates that it is known in the art of forming hook shaped probes to sharpen either by applying tension across a tube (Figure 3) or by etching with a first solution layer comprising hydrofluoric acid and a second solution layer having a lower specific gravity than the first solution layer (See Figure 2 and Paragraph 7 of translation) and not reacting or mixing with the first solution layer.

It would have been obvious to one skilled in the art at the time of invention to use a suitable wet chemical etching technique including a second solution layer having a lower specific gravity than the first solution layer and not reacting or mixing with the first solution layer as shown by JP '338 so that the layer is "effective in pressing down the fluorine acid emitted to air", as recited (Paragraph 9) of JP '338

Regarding Claim 17, the Examiner takes Official Notice that use of a vibration isolation table and temperature controller, is well known in the etching art. It would have been obvious to one of ordinary skill in the art at the time of invention to use vibration isolation to improve etching accuracy by reducing vibrations and temperature control to optimize the etching rate in the well-known manner.

Regarding Claim 18, the Examiner takes Official Notice that the process of rinsing using water-soluble organic solvent to remove oils is well known in the chemical arts. It would have been obvious to one of ordinary skill in the art at the time of invention to use water-soluble organic solvent to remove the second solution layer (10) of JP'338 in the well-known manner.

Art Unit: 1763

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-162332 in view of U.S. Patent 6,388,239 to Muramatsu, as applied above to Claims 1, 2, 22, 24, 29, 30, 32, 34, 35, 37-40, 46 and 47, and in further view of U.S. Patent Application Publication 2002/0054285 to Todo et al.

As applied above, JP '332 in view of Muramatsu teaches the method of the invention substantially as claimed, but does not expressly teach testing for the presence or absence of cylindrical cavity defects.

Todo et al. teach testing for the presence or absence of cavity defects in an optical fiber. (see entire disclosure of Todo et al.

It would have been obvious to one of ordinary skill in the art at the time of invention to test for the presence or absence of cavity defects in an optical fiber in order to determine suitability for use as an optical device as shown by Todo et al.

Claim 44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-162332 in view of U.S. Patent 6,388,239 to Muramatsu, as applied above to Claims 1, 2, 22, 24, 29, 30, 32, 34, 35, 37-40, 46 and 47, and in further view of U.S. Patent 3,982,943 to Feng.

Regarding Claim 44, JP'332 teaches that resist materials (Paragraph 43) may be used as the removable resin, but does not expressly teach removing the resist material using ultrasonic cleaning with a cleaning solvent mainly composed of N-methyl-2-pyrrolidone. However, N-methyl-2-pyrrolidone (*Synonyms: N-methylpyrrolidone, 1-methyl-2-pyrrolidinone, NMP*) is a conventional stripping agent for resist materials using ultrasonic agitation as shown for example by Feng et al. (Col. 6, Lines 6-9) It would have been obvious to one of ordinary skill in the art at the time of invention to use the conventional solvents for resist removal, as shown by Feng et al.

Regarding Claim 45, removing the resist material using ultrasonic cleaning with a cleaning solvent mainly composed of N-methyl-2-pyrrolidone further reads broadly on removing trace amounts of foreign matter that have become attached to the surface by ultrasonic cleaning with a cleaning solvent mainly composed of N-methyl-2-pyrrolidone before any or all of the step of removing the resist material.

Art Unit: 1763

Allowable Subject Matter

Claims 5-15, 20, 21, 23, 25, 26, 31, 33 and 41-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 27, 28, 36 and 47 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571) 272-1433. The examiner can normally be reached on Monday-Friday (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



R. Culbert
Examiner
Art Unit 1763